

Rejections Under 35 USC § 103

Claims 1, 4 and 8-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Takahashi, et al. (JP 2000-238254) and Harlow (U.S. Patent No. 5,645,884). The Examiner stated:

Referring to claim 1, Hynes teaches a precision marking system to place reference markers on an object that comprises: a work surface (36) on which the object is placed, a multiple axis robot (20), wherein positioning the multiple axis robot directed by a control system; and at least one end-effector (26) operable coupled to the multiple axis robot to place reference markers on the object, wherein the end-effector further comprises: a delivery system (See Column 4, lines 35-45) and a pick shaped stylus (See Column 2, line 63) coupled to a valve and wherein the pick shaped stylus has an internal orifice through which the ink is dispensed from the end-effector and onto the object (hole between 34 and needle; See Column 2, lines 59-62). Hynes does not teach an object locator system to determine the location and orientation of the object and features within the object relative to the work surface.

Takahashi et al. teaches an object locator system in a precision marking system to determine the location and orientation of the object as mentioned in paragraphs [0022], [0023] and [0028] of Takahashi. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes to include an object locator so that markings can be accurately applied on the object as taught by Takahashi et al.

Hynes teaches a delivery system but does not teach an ink delivery system. Hynes does not teach a pulsed valve to regulate the supply of ink from the ink delivery system. Harlow teaches an ink delivery system and a pulsed valve to regulate the supply of ink from the ink delivery system (See Column 2, lines 60-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes to include an ink delivery system and a pulsed valve to regulate the supply, of ink from the ink delivery system in order to vary the amount of ink to be provided on the

object as taught by Harlow. Referring to claim 4, Hynes teaches the precision marking system wherein the pick shaped stylus provide radial clearance around the orifice. (See Figure 7 and Column 2, lines 60-65).

Referring to claim 8, Hynes teaches a multiple axis robot but does not teach that the robot comprises a 6-axis gantry robot. Harlow teaches a 6-axis gantry robot (See Figure 8 or 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the robot of Hynes to include a 6-axis gantry robot to provide a robot to move in multiple axis so that a uniform coating can be applied to an object as taught by Harlow.

Referring to claim 9, Hynes teaches the precision marking system with reference markers (See Column 1, lines 55-58). Hynes does not teach reference markers that provide alignment information for additional objects to be mechanically coupled to the object. Examiner notes that markings printed by Takahashi et al. are capable of being used as reference markers that provide alignment information for additional objects to be mechanically coupled to the object.

Referring to claim 10, Hynes teaches the precision marking system with reference markers (See Column 1, lines 55-58). Hynes does not teach reference markers that provide part identification information. Examiner notes that the coating of Hynes can be used as reference markers that provide part identification information.

Referring to claim 11, Hynes teaches the precision marking system with reference markers (See Column 1, lines 55-58). Hynes does not teach that the reference markers provide assembly information to a user. Examiner notes that the coating of Hynes can be used as reference markers that provide assembly information to a user.

Referring to claim 12, Hynes teaches the precision marking system marking on an object (See Column 1, lines 11-12). Hynes does not teach that the object further comprises an aircraft understructure. Harlow teaches that the object can be an aircraft understructure (See Column 3, line 43). It would have been obvious to one having ordinary skill in the art at the time the invention was

made to replace the object of Hynes with an aircraft understructure so that it can be marked as taught by Harlow.

Referring to claim 13, Hynes teaches the precision marking system wherein the end-effector is oriented to place reference markers on the surface of the object (See Column 1, lines 59-63).

Referring to claim 14, Hynes teaches an end-effector oriented to place reference markers (See Column 1, lines 59-63). Hynes is capable of being oriented to place reference markers on walls located an angle the surface of the object.

Requirements for a Prima Facie Case of Obviousness

In order to establish a *prima facie* case of obviousness, Section 2143 of the MPEP requires that:

...three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Motivation to Combine

Addressing the first criteria, the MPEP prescribes in Section 706.02(j) that:

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections.

In the most recent Action, the Examiner has not pointed out any teaching in the cited references that “expressly or impliedly suggest[s] the claimed invention.” Nor has the Examiner “present[ed] a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” The only teaching of the implementation of a precision marking system to place reference markers on an object, in this case, is in the Applicant’s own application. Thus, the Examiner’s rejection fails to meet the first criteria for a *prima facie* case of obviousness.

Reasonable Expectation of Success

The hypothetical combiner, having combined Hynes, Takahashi and Harlow to create a precision marking system to place reference markers on an object. The combiner would find it difficult or impossible, to precisely place reference markers using the combined system as Haynes merely teaches a system and method of providing conformal coatings.

Thus, the hypothetical combiner of Hynes, Takahashi and Harlow would find it impossible to use the combined technologies in the way claimed for the invention of the present application. As a result, the Examiner’s rejection fails to meet the second criteria for a *prima facie* case of obviousness.

Teaching or Suggestion of All Claim Limitations

The present application teaches, and all the claims of the present application claim, an apparatus or method of precisely place reference markers. Hynes does not teach all the claim limitations of the present application. Neither Takahashi nor Harlow teaches the omitted limitations. The application of the claimed invention is to precisely place reference markers. As described above, the hypothetical combiner will be unable to use the claimed invention is to precisely place reference markers. Thus, the proposed combination of references neither teaches nor suggests all the claim limitations and, as such, the Examiner’s rejection fails to meet the third criteria for a *prima facie* case of obviousness.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and or Takahashi. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claims 1, 4 and 8-14 respectfully requested.

With reference to claim 1, the Examiner states that end-effector 26 is “operably coupled to the multiple axis robot to place reference markers on the object”. The applicant respectfully submits that Haynes merely teaches a system and method of providing conformal coatings by employing multiple coating applicators. At no point does Haynes teach that the end-effector may be used to place reference markers on the object. Haynes teaches “dispensing of conformal coating on small circuit board components as well as the ability to spray conformal coatings across large areas of a circuit board.” (Haynes, column 1, lines 30-34). The applicant respectfully submits that the placement of a conformal coating which is a coating that adheres and conforms to the surface of the object greatly differs from the precise placement of reference markers as enabled by the end-effectors used in the present invention. The applicant reckons this difference to the wide placement of a coating such as paint by a spray can to the fine placement of ink using a fine instrument such as a pen. Thus, the applicant respectfully submits that Haynes does not teach end-effectors operable to place reference markers on the object.

The applicant further submits that Haynes fails to teach the shaped stylus which the Examiner cites as being presented in (Haynes column 2, line 63.) The applicant respectfully submits that the shaped stylus may be shaped like a shaped dental pick or instrument in order to greatly enhance the ability of the robot to place reference markers within confined areas. The dispensing valve 34 shown in Haynes within Figures 3, 4, 5, 6, and 7 all depict the dispensing valve as a narrow, cylindrical straight object which does not provide the shaped stylus taught in the present invention. The applicant has amended the claims to more clearly claim this stylus as a “curved stylus” as opposed to the “pick shape stylus.”

With respect to the Examiner’s assertion that Harlow teaches an object locator system (98, Figure 20) the applicant respectfully submits that Harlow does not teach an object locator but merely teaches the presence of an external sensor 98 which may be used in a general feedback control system for safety interlocks. (Harlow, column 13, lines 35-39). No further mention of an object locator system 98 is mentioned in Harlow. Therefore, the applicant respectfully submits that the sensor 98 merely provides a safety interlock that may affect the

operation of a coatings applicator rather than the exact location and orientation of an object as required by a system operable to place detailed reference markings. The applicant again submits that Harlow, like Haynes, teaches a coatings applicator, (i.e. the painting of ducks on a conveyor) as opposed to a precision markings applicator. The level of precision required in a reference marking system its orders of magnitude greater than that required of a coating applicator.

With respect to the examiner's assertion that Takahashi teaches an object locator system. The applicant respectfully traverses the assertion that Takahashi provides an object locator system to determine the location and orientation of the object. The applicant respectfully submits that Takahashi is designed to place a pattern on the surface of 3-dimensional object such as vehicle seat. The surface upon which it is deposited, as shown in Figure 1 of Takahashi and as discussed in the Abstract, is a relatively flat surface. As discussed in the Machine Translated, Paragraphs [0022], [0023] and [0028] of Takahashi, the surface location on which the pattern to be deposited is updated based on a known change in location of the 3-dimensional object. However, it is not clearly identified that a locator system is used to determine the object's location and orientation in space such that the reference markers may be properly placed on the surface, wherein surfaces may be within confined spaces.

Further, the precision required in locating the reference markers of the claimed invention may differ from the teachings of Takahashi. Takahashi teaches "forming an intricate pattern and a plurality of colors on the surface of a 3-dimensional article." (Takahashi, Abstract) Thus, Takahashi is concerned with the proper placement of a pattern relative to other portions of the pattern. This can be distinguished from the present invention where the precise placement of the markings is required with respect to the object as opposed to other layers of the pattern. Thus, Takahashi does not necessarily require exact knowledge of the 3-dimensional object's precise location as is required and determined in the present invention as claimed.

With respect to the Examiner's assertion that Haynes teaches a precision marking system where the pick-shaped stylus provides radial clearance about the orifice in Figure 7 in lines 60-65 of Haynes. The applicant respectfully submits that a shaped stylus is not taught by Haynes. Additionally, precision marking is not taught by Haynes because Haynes merely teaches the application via a round spray pattern to provide a conformal coating to an object on a belt conveyor. Figure 7 fails to show a pick-shaped stylus operable to provide precision marking

within a confined space of the object. Rather, Figure 7 depicts that a coatings applicator may be tilted in order to apply coatings to the outer vertical surfaces of an object.

With respect to claim 8 and the Examiner's assertion that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the robot of Haynes to include a 6-axis gantry robot to provide a robot to move in multiple axes so that a uniform coating can be applied to an object as taught by Harlow;" the applicant respectfully submits that the application of a uniform coatings on an object is not the present invention. Rather, the present invention teaches and claims the placement of precision referenced markings on an object.

With respect to the Examiner's assertion regarding claim 9 "that Haynes teaches the precision system with reference markers (see column 1, lines 55-58)" the applicant respectfully submits that lines 55-58 teach the application of a conformal coating. A conformal coating by definition is a coating that adheres and conforms to the surface of the object. This coating is unpatterned. Haynes fails to teach that the coating can be patterned to provide precision reference markings. The applicant respectfully traverses the Examiner's assertion that "the coatings of Haynes can be used for reference markings that provide alignment information for additional objects to be mechanically coupled to the object and that these coatings can be used as reference markings that provide part identification. The applicant further traverses the Examiner's assertion that "the coatings of Haynes can be used as reference markers that provide assembly information to a user".

Applicant further submits that neither Haynes, Harlow or Takahashi alone nor any combination thereof teaches or suggests make obvious the invention recited in Claims 1, 4 and 8-14 because the cited references do not disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system while Takahashi teaches a system and method of depositing a multi-color pattern on a relatively flat surface.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to Claims 1, 4 and 8-14 under 35 USC § 103(a) and allow Claims 1, 4 and 8-14.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Takahashi et al. (JP 2000-238254) and Harlow (U.S. Patent No. 5,645,884) and further in view of Bajoux et al. (U.S. Patent No. 5,160,939). The Examiner states:

Referring to claim 2, Hynes and Harlow teach all that is claimed as discussed above but they do not teach the precision marking system wherein the ink delivery system further comprises an ink reservoir operably coupled to a positive displacement pump. Bajoux et al teaches an ink delivery system further comprises an ink reservoir (48) operably coupled to a positive displacement pump (50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes, Harlow and Takahashi et al. to include an ink reservoir operably coupled to a positive displacement pump to supply the ink head properly with ink as taught by Bajoux et al.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Takahashi, Harlow and/or Bajoux. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 2 respectfully requested.

Applicant further submits that Haynes, Harlow and/or Bajoux alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 2 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 2 under 35 USC § 103(a) and allow claim 2.

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Harlow (U.S. Patent No. 5,645,884) and Takahashi et al. (JP 2000-238254) and further in view of Harenbrock (U.S. Patent No. 6,499,399). The Examiner states:

Referring to claim 3, Hynes in view of Takahashi et al. Harlow teach all that is claimed as discussed above. They do not teach the precision marking system of Claim 1, wherein the ink delivery system further comprises a positive pressure pneumatic reservoir delivery system. Harenbrock teaches an ink delivery system that further comprises a positive pressure pneumatic reservoir delivery system (See Column 3, lines 7-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the

system of Hynes, Takahashi et al. and Harlow to include a positive pressure pneumatic reservoir delivery system to provide amounts of ink to the system using a gaseous medium as taught by Harenbrock.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Harenbrock. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 3 respectfully requested.

Applicant further submits that Haynes, Takahashi, Harlow and/or Harenbrock alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 3 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 3 under 35 USC § 103(a) and allow claim 3.

Claims 5 and 6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Harlow (U.S. Patent No. 5,645,884) and Takahashi et al. (JP 2000-238254) and further in view of Bevirt et al (U.S. Patent No. 6,739,448). The Examiner states:

Referring to claim 5, Hynes in view of Takahashi et al. Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the work surface comprises a shuttle table. Bevirt teaches a work surface which comprises a shuttle table (28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes, Takahashi et al. and Harlow to include a shuttle table support and transport large objects as taught by Bevirt.

Referring to claim 6, Hynes, Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the shuttle table further comprises a series of vacuum support pins predetermined arrangement for a given object Bevirt teaches a series of vacuum support pins (52) predetermined arrangement for a given object. It would have been obvious to one having ordinary skill in the art at the time the invention was

made to modify Hynes, Takahashi et al. and Harlow to include vacuum support pins to help in supporting the object on the table as taught by Bevirt.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Bevirt. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claims 5 and 6 is respectfully requested.

Applicant further submits that Haynes, Takahashi, Harlow and/or Bevirt alone nor any combination thereof teaches or suggests make obvious the invention recited in Claims 5 and 6 because, for the reasons cited above, Haynes, Takahashi, and Harlow fail to disclose a precision reference marking system. Rather Haynes, Takahashi, and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 5 and 6 under 35 USC § 103(a) and allow claims 5 and 6.

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Harlow (U.S. Patent No. 5,645,884) and Takahashi et al. (JP 2000-238254) and further in view of Pryor (U.S. Patent No. 6,301,763). The Examiner states:

Referring to claim 7, Hynes in view of Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the object locator system further comprises a vision end-effector to locate the object within a work envelope. Pryor teaches an object locator system further comprising a vision end-effector to locate the object within a work envelope. (Figure 3A, 313). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow to include a vision end-effector to help to locate the object with a camera and monitor for better accuracy of locating the object and specific points on the object.'

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Takahashi, Harlow and/or Pryor. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 3 respectfully requested.

Applicant further submits that Haynes, Takahashi, Harlow and/or Pryor alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 3 because, for the reasons cited above, Haynes, Takahashi and Harlow fail to disclose a precision reference marking system. Rather Haynes, Takahashi and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 7 under 35 USC § 103(a) and allow claim 7.

Claim 15 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Harlow (U.S. Patent No. 5,645,884) and Takahashi et al. (JP 2000-238254) and further in view of Terada (U.S. Patent No. 5,572,103). The Examiner states:

Referring to claim 15, Hynes in view of Takahashi et al. and Harlow teaches all that is claimed as discussed above. They do not teach the precision marking system further comprising a calibration system operable to calibrate each end-effector when selected. Terada teaches a system further comprising a calibration system operable to calibrate each end-effector when selected. (See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow to include a calibration system so that the effector can have minimal errors due to the position of the robot.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Terada. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 15 respectfully requested.

Applicant further submits that Haynes, Takahashi, Harlow and/or Terada alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 15 because, for the reasons cited above, Haynes, Takahashi and Harlow fail to disclose a precision reference marking system. Rather Haynes, Takahashi and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 15 under 35 USC § 103(a) and allow claim 15.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (U.S. Patent No. 6,447,847) in view of Harlow (U.S. Patent No. 5,645,884) and Takahashi et al. (JP 2000-238254) in further view of Gokey (U.S. Patent No. 5,386,762). The Examiner states:

Referring to claim 16, Hynes in view of Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the end-effector is stored within a storage rack when not operable coupled to the multiple axis robot. Gokey teaches that an end-effector is stored within a storage rack when not operable coupled to the multiple axis robot (See Column 5, lines 1 1-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow such that an end-effector is stored within a storage rack when not operable coupled to the multiple axis robot so that the robot can retrieve the proper effector when desired as taught by Gokey.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Takahashi, Harlow and/or Gokey. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 16 respectfully requested.

The applicant respectfully submits that for the reasons presented above Haynes and Harlow do not teach a precision marking system. Therefore, the applicant respectfully submits that it is improper to combine Haynes, Takahashi and Harlow with Gokey to reach the present invention as claimed in claim 16. For the reasons stated previously, the applicant respectfully submits that Haynes, Takahashi and Harlow failed to teach a precision marking system operable to place reference markers on an object. Haynes, Takahashi and Harlow failed to teach use of a pick-shaped stylus as an invention to reach into difficult access areas of the object as previously stated. The applicant respectfully traverses the examiner's insertion that column 2, line 63 teach a pick-shaped stylus. With respect to the examiner's insertion that Harlow teaches that the fluids may comprise inks, paints, epoxy, or adhesives "(see column 8, line 48)," the applicant respectfully submits that column 8, lines 40 through 53 teach a duck being painted with two robot arms. Therefore, the applicant respectfully submits that paint is taught where paint may be broadly applied to the surface of a duck but fails to teach the placement of precision reference markings.

Applicant further submits that Haynes, Takahashi, Harlow and/or Gokey alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 16 because, for the reasons cited above, Haynes, Takahashi and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

The applicant respectfully requests that the rejections under 35 USC § 103(a) to claim 16 be withdrawn and that the claim be allowed.

Claims 17, 20-21 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (U.S. Patent No. 5,645,884) in view of Hynes (U.S. Patent No. 6,447,847). The Examiner states:

Referring to claim 17, Harlow teaches An end-effector to place reference markers on an object that comprises: a fluid delivery system (92), a pulsed valve to regulate the supply of fluids from the fluid delivery system (See Column 2, lines 60-65), and a stylus (Fig 11) operably coupled to the pulsed valve to receive fluids from the pulsed valve, and wherein the pick shaped stylus has an internal orifice (154) through which the fluids are dispensed from the end-effector and onto the object. See Figure 11). Harlow does not teach that that stylus is pick shaped. Hynes teaches a pick shaped stylus (See Column 2, line 63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stylus of Harlow such that it is pick shaped so that it can mark in more detail as taught by Hynes.

Referring to claim 20, Harlow teaches the end-effector wherein the stylus provide radial clearance around the orifice. (See Figure 11).

Referring to claim 21, Harlow teaches the end-effector wherein the end-effector is operably coupled to a multi axis robot within a precision marking system. (See Figure 9).

Referring to claim 23, Harlow teaches the end-effector wherein the fluids further comprise inks, paints, epoxy, or adhesives. (See Column 8, line 48).

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Harenbrock. Therefore, it is improper to combine the teachings of Haynes and Harlow with Harenbrock to reach a precision marking system having an ink delivery system as presented in claim 17, 20-21 and 23. Therefore, the rejection on a

combination of these references is inappropriate. Withdrawal of the rejection allowance of Claims 17, 20-21 and 23 is respectfully requested.

Applicant further submits that Haynes, Harlow and/or Harenbrock alone nor any combination thereof teaches or suggests make obvious the invention recited in Claims 17, 20-21 and 23 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the rejection to Claims 17, 20-21 and 23 under 35 USC § 103(a) be withdrawn and that this claim be allowed.

Claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (U.S. Patent No. 5,645,884) in view of Hynes (U.S. Patent No. 6,447,847) and further in view of Bajoux et al (U.S. Patent No. 5,160,939). The Examiner states:

Referring to claim 18, Harlow and Hynes teach all that is claimed as discussed above but they do not teach the precision marking system wherein the ink delivery system further comprises an ink reservoir operably coupled to a positive displacement pump. Bajoux teaches an ink delivery system further comprises an ink reservoir (48) operably coupled to a positive displacement pump (50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes and Harlow to include an ink reservoir operably coupled to a positive displacement pump to supply the ink head properly with ink as taught by Bajoux.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Bajoux. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 18 respectfully requested.

Applicant further submits that Haynes, Harlow and/or Bajoux alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 2 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 18 under 35 USC § 103(a) and allow claim 18.

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (U.S. Patent No. 5,645,884) in view of Hynes (U.S. Patent No. 6,447,847) and further in view of Harenbrock (U.S. Patent No. 6,499,399). The Examiner states:

Referring to claim 3, Hynes and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system of Claim 17, wherein the ink delivery system further comprises a positive pressure pneumatic reservoir delivery system. Harenbrock teaches an ink delivery system that further comprises a positive pressure pneumatic reservoir delivery system (See Column 3, lines 7-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes and Harlow to include a positive pressure pneumatic reservoir delivery system to provide amounts of ink to the system using a gaseous medium as taught by Harenbrock.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Harenbrock. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 19 is respectfully requested.

Applicant further submits that Haynes, Harlow and/or Harenbrock alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 3 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 19 under 35 USC § 103(a) and allow claim 19.

Claim 22 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (5645884) in view of Hynes (6447847) and further in view of Takahashi et al. (JP 2000-238254). The Examiner states:

Harlow in view of Hynes discloses the claimed end-effector except for the object locator system. However, Takahashi et al. teaches an object locator system to determine the location and orientation of the object as mentioned in paragraphs [0022], [0023] and [0028] of Takahashi. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the

system of Hynes and Harlow to include an object locator so that markings can be accurately applied on the object as taught by Takahashi et al.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Haynes with Harlow and/or Takahashi. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claim 22 is respectfully requested.

Applicant further submits that Haynes, Harlow and/or Takahashi alone nor any combination thereof teaches or suggests make obvious the invention recited in Claim 22 because, for the reasons cited above, Haynes and Harlow fail to disclose a precision reference marking system. Rather Haynes and Harlow merely teach a conformal coating system.

Therefore, the applicant respectfully requests that the examiner withdraw the rejection to claim 22 under 35 USC § 103(a) and allow claim 22.

Response to Arguments

The Examiner states:

Applicant's arguments filed 7/27/05 have been fully considered but they are not persuasive of any error in the above rejection.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is found in the knowledge generally available to one of ordinary skill in the art.

Applicant argues that "at no point does Hynes teach that the end-effector may be used to place reference markers on the object." It is noted that this language, to which applicant is referring, is a "for use" type statement and does not positively recite any structure in the claim. The references need not disclose the functions found in "for use" type statements. However, it does appear that

the device disclosed by Hynes would be capable of placing reference markers on an object.

Applicant further argues that Hynes does not teach that "the shaped stylus may be shaped like a shaped dental pick or instrument." It is noted that applicant does not use the term "dental pick or instrument" in the actual claim language. Instead applicant uses the broader term, "pick shaped stylus." The examiner believes that needle valve 34 (as shown in Figure 6 of Hynes) can be considered pick shaped because it is in the general shape of other types of picks such as a toothpick.

With respect to applicant's arguments regarding the object locator system and precision marking system, the patent to Takahashi et al. has been added to the rejection to provide support for rejecting these claim recitations.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimizu, Sakurada and Sugiyama are cited to show other examples of precision marking systems with at least one end-effector.

The applicant respectfully submits that the claims have been amended to more clearly claim this stylus as a "curved stylus" as opposed to the "pick shape stylus." Thus, overcoming the objections based on Hynes as presented above.

With respect to the examiner's assertion that Takahashi teaches an object locator system, the applicant respectfully traverses the assertion that Takahashi provides an object locator system to determine the location and orientation of the object. The applicant respectfully submits that Takahashi is designed to place a pattern on the surface of 3-dimensional object such as vehicle seat. The surface upon which it is deposited, as shown in Figure 1 of Takahashi and as discussed in the Abstract, is a relatively flat surface. As discussed in the Machine Translated, Paragraphs [0022], [0023] and [0028] of Takahashi, the surface location on which the pattern to be deposited is updated based on a known change in location of the 3-dimensional object. However, it is not clearly identified that a locator system is used to determine the object's location and orientation in space such that the reference markers may be properly placed on the surface, wherein surfaces may be within confined spaces.

Further, the precision required in locating the reference markers of the claimed invention may differ from the teachings of Takahashi. Takahashi teaches "forming an intricate pattern and

a plurality of colors on the surface of a 3-dimensional article.” (Takahashi, Abstract) Thus, Takahashi is concerned with the proper placement of a pattern relative to other portions of the pattern. This can be distinguished from the present invention where the precise placement of the markings is required with respect to the object as opposed to other layers of the pattern. Thus, Takahashi does not necessarily require exact knowledge of the 3-dimensional object’s precise location as is required and determined in the present invention as claimed.

REMARKS

Applicant appreciates the time taken by the Examiner to review Applicant’s present application. This application has been carefully reviewed in light of the Official Action mailed October 27, 2005. Applicant respectfully requests reconsideration and favorable action in this case.

CONCLUSION

Applicant has now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests full allowance of Claims 1-23.

An extension of three (3) months is requested under 37 C.F.R. § 1.136 with the appropriate fee attached. While Applicants believe no fee is due with this transmission, if any fees are due, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-2126 of Garlick Harrison & Markison, LLP.

It is believed no fee is due with this transmission, however, should a fee be determined due with this transmission, the Commissioner is authorized to debit Deposit Account No. 50-2126 of Garlick, Harrison & Markison, LLP.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert A. McLauchlan", with a stylized flourish at the end.

Robert A. McLauchlan
Reg. No. 44,924
ATTORNEY FOR APPLICANTS

Dated: March 27, 2006

Garlick, Harrison & Markison, LLP
P.O. Box 160727
Austin, Texas 78716-0727
(512) 339-4100
(512) 692-2529 (Fax)